

Logs and Exponents Review

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Expand each logarithm.

1) $\log_6 \frac{x^3}{y^4}$

2) $\log_6 \left(\frac{2^3}{11} \right)^3$

Condense each expression to a single logarithm.

3) $12\log_6 3 - 6\log_6 8$

4) $4\log_9 x - 4\log_9 y$

Solve each equation. Round your answers to the nearest ten-thousandth.

5) $\left(\frac{1}{4} \right)^{-3a} = 64^{-2a}$

6) $64^p = 8$

7) $4^{2n} = 64$

8) $5^{2a} = 5^{-2a}$

9) $\left(\frac{1}{27} \right)^{2x-1} = 243^{-2x}$

10) $2 \cdot 15^{m-8} = 65$

11) $4 \cdot 4^{8a} = 36$

12) $6 \cdot 7^{x+6} = 42$

13) $4 \cdot e^{9a-9} + 2 = 101$

14) $-3 \cdot e^{4x-2} + 3 = -93$

$$15) 4\log_2 10v = 16$$

$$16) \log -2v - 1 = -3$$

$$17) \log_6 (a^2 + 1) = \log_6 (3a - 1)$$

$$18) \log_{19} (4p^2 - 15p) = \log_{19} (-50 + 3p^2)$$

$$19) \log_5 (4x^2 + 8) - \log_5 3 = 1$$

$$20) \log_6 9 - \log_6 (3x + 2) = 2$$

$$21) \log_2 (5x^2 + 4) - \log_2 6 = 2$$

$$22) \log_5 9 + \log_5 (3 - 2x^2) = 2$$

$$23) \log_5 10 + \log_5 (3x^2 + 6) = 3$$

Identify the domain and range of each. Then sketch the graph.

$$24) y = \ln (x - 2) - 1$$

$$25) y = \log_3 (x + 2) + 1$$

